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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,429	01/12/2004	Robert S. Nemiroff	MOTO BCS03181	9697

7590 07/06/2007

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EXAMINER	
WERNER, DAVID N	

ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
07/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/755,429	NEMIROFF ET AL.	
	Examiner	Art Unit	
	David N. Werner	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20040112, 2004604, 20050422*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This is the First Action on the Merits for US Patent Application 10/755429. Currently, claims 1-28 are pending.

Information Disclosure Statement

2. The information disclosure statement filed 04 June 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 28 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The term "carrier" in the claim and type (iii) of the "signal bearing media" in paragraph [0050] of the specification indicates a carrier wave or signal, which has been held as non-statutory (*O'Reilly v. Morse*, 56 U.S. (15 How.) 62 (1854)), and the open-ended term "including" in the claim is not considered sufficient for linking a computer program with a computer-readable medium in statutory form.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haskell et al. in view of US Patent Application Publication 2002/0106022 A1 (Satoh et al). Haskell et al. teaches a system for converting a video transmission bit rate. Regarding step (a) of claim 1 and claim 13, Haskell et al. determines the targeted number of bits per macroblock to be output based on a desired output rate signal and a buffer status signal (column 5, lines 28-31). The buffer status signal is the occupancy rate of a transmission buffer that outputs re-encoded compressed video at a constant bit rate, and so is a measure of the number of bits in a frame (column 5, lines 4-12). A macroblock is considered to meet the claimed "set of video data", and the claimed "adjustment factor" is proportional to the output rate. Regarding step (b) of claim 1 and claim 13, Haskell et al. calculates the average number of bits per frame (column 9, lines 8-14). Regarding steps (c) and (d) of claim 1 and claim 13, Haskell et al. calculates a target number of bits per frame and per macroblock based on a constant, the target video output rate, the maximum frame rate, and the total number of macroblocks in the frame (column 9, lines 8-30). The target macroblock rate corresponds with the activity of "sets", and the target frame rate corresponds with the activity of the "set of sets".

Haskell et al. does not explicitly teach normalizing the spatial activity value, as shown in step (d) of claim 1 and claim 13. However, the examiner takes Official Notice that the concept and advantage of normalizing an activity value is both well known and expected in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to normalize the spatial activity value in order to provide a baseline comparison and smooth out a large difference in activity levels between frames.

Regarding claim 2 and claim 14, in one embodiment of Haskell et al., the amount of data output is controlled by requantizing the DCT coefficients of a macroblock (column 10, lines 49-57). Regarding claim 3 and claim 15, after processing one macroblock, the system of Haskell et al. updates the buffer status and the control signal controlling the adjustment to the amount of data to be output (column 9, lines 42-65). Regarding claim 4 and claim 16, after processing a macroblock, Haskell et al. checks to see if a frame is finished, and if it is, updates frame parameters (column 10, lines 4-8). Regarding claim 5 and claim 17, after processing each frame, Haskell et al. recalculates the number of bits per frame, targeted bits for the next frame, and the control signal (column 10, lines 8-22).

Regarding claim 6, in one embodiment of Haskell et al., the difference between targeted bits per macroblock and actual bits per macroblock determines the number of DCT indices to be retained and the number to be suppressed to zero (column 9, line 60–column 10, line 3). Regarding claim 8, in one embodiment of Haskell et al., the difference between targeted bits per macroblock and actual bits per macroblock

determines the size of the DCT quantization parameter (column 11, lines 56-63). Regarding claim 7, the values of DCT coefficients are directly proportional to the quantization parameter. Therefore, by adjusting the quantization parameter, coefficient values are inherently adjusted. Regarding claim 20, Haskell et al. preferably operates on H.261 video, which encodes macroblocks with the Discrete Cosine Transform (DCT) (column 4, lines 27-29). Regarding claims 21 and 22, H.261 coding was known to encode each macroblock with six DCT blocks, including four luma blocks and two chroma blocks (column 7, line 62–column 8, line 22). Since claim 21 does not state that determining spatial activity is performed "only" among luma blocks, a determination of spatial activity according to both H.261 luma and chroma blocks is within the scope of both claim 21 and claim 22. Regarding claim 26, figure 1 of Haskell et al. shows decoder 104, DCT coefficients processor 107, encoder 109, and controller 113. Regarding claim 27, those components are considered equivalent to those shown in figure 1 and described in the specification of the present invention, and so fall within the limitations implied by 35 U.S.C. 112, sixth paragraph, according to the means-plus-function language of the claim. Regarding claim 28, the system of Haskell et al. may be implemented on a general-purpose microprocessor, a DSP, or a programmable video-processing chip (column 14, lines 24-30).

The presently claimed invention encompasses specific calculations for the spatial activity value in response to specific data in the video, as shown in claims 6-8, and the calculation of a normalized spatial activity value, for example, in claims 1d and 9. However, in Haskell et al., spatial activity is instead measured simply according to the

number of bits per macroblock (column 9, lines 60-63), and as mentioned previously, does not calculate a normalized spatial activity value.

Satoh et al. teaches a transcoder for converting from MPEG-2 video to MPEG-4 video. Regarding claims 6 and 7, in Satoh et al., global complexity measure X for a frame is determined according to S, the number of coded bits in a picture (paragraph 0021). Since MPEG-2 and MPEG-4 use variable-length coding techniques in which larger DCT coefficients take more bits than small coefficients, a high number of bits per picture may indicate a high number of DCT coefficients or large values thereof. Regarding claim 8, global complexity measure X is also dependent on Q, the average quantization scale code for the frame (paragraph 0021-0022).

Haskell et al. discloses the claimed invention except for details of measuring data complexity. Satoh et al. teaches that it was known to measure video frame complexity according to both the number of coded bits per frame and the quantization scale for a frame. Therefore, it would have been obvious to one having ordinary skill in the art to generate a picture complexity measure according to specific picture details as taught by Satoh et al., since Satoh et al. states in paragraph [0025] that such a modification would be useful to generate an accurate calculation for the number of bits to allocate to a transcoded frame.

Regarding claims 1d, 9, 13d, and 23, equation 22 of Satoh et al. gives a normalized activity calculation identical to that presently claimed (paragraph 0038). Regarding claims 10 and 24, *f*(rcFactor) is set as equal to 2. Regarding claims 11 and 25, a constant function is inherently continuous across its domain. Regarding claim 18,

Satoh et al. keeps separate global complexity measures and separate allocation bit amounts for I-frames, P-frames, and B-frames (paragraphs 0021, 0025) and so only compares frames only with other frames of the same type, and regarding claim 19, in Satoh et al., the quantization scale for a B-frame is kept at 1.4 times that of an I-frame or P-frame (paragraphs 0023-0024).

Regarding claim 12, equation 23 of Satoh et al. gives a quantization adjustment calculation nearly identical to that claimed except the present invention gives an extra factor of rcFactor. However, if rcFactor is equal to 1, the two calculations are equivalent. Then, Satoh et al. discloses the claimed invention except for the value of rcFactor. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set rcFactor to 1, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. See *In re Boesch*, 617 F.2d 272, USPQ 215 (CCPA 1980).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 56,324,214 B2 (Mihara) teaches a system for encoding video that adaptively adjusts the target bit allocation for video data depending on a difficulty factor. "Field-to-Frame Transcoding with Spatial and Temporal Downsampling" (Wee et al.) teaches a method of transcoding a high-quality MPEG-2 bitstream to a low-bitrate H.263 bitstream.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is (571) 272-9662. The examiner can normally be reached on Monday-Friday from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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